

From: Deirdre Des Jardins <ddj@cah2oresearch.com>

Sent: Monday, October 13, 2025 12:28 PM

To: Delta Council ISB <disb@deltacouncil.ca.gov>

Subject: Talk: failure of CMIP6 models to capture decadal-scale variability in the Pacific

Hi all

The Emerging Climate Symposium didn't cover the failure of the current generation of climate models to capture decadal-scale variability in the Pacific. It is something that we started to understand in recent years.

Richard Seager at Lamont-Dougherty has been one of the leading researchers on drought in the Southwest. His graduate student, Tess Wei-Ping Jacobson, is giving a talk on their latest publication, [Pacific Decadal Variability and Its Hydroclimate Teleconnections in CMIP6 Models](#).

Abstract

Natural decadal climate variability in the Pacific, such as the Pacific decadal oscillation (PDO) or the interdecadal Pacific oscillation (IPO), plays a powerful role in evolving global hydroclimate on decadal time scales. Recent generations of general circulation models (GCMs) have been found to simulate the spatial pattern of the PDO well but struggle to capture temporal variability on decadal time scales. To use GCMs to project future climate, we must understand the degree to which climate models can successfully reproduce historical PDO and IPO spatial patterns, temporal behavior, and influence on hydroclimate. We calculate PDO and IPO spatial patterns and time series using 16 models within the CMIP6 archive, all with large ($n \geq 10$) ensembles, and compare them to observations in an integrated assessment of models' ability to represent Pacific decadal variability spatiotemporally. All models underestimate decadal variability in the PDO and IPO and have a westward bias in their PDO and IPO North Pacific SST anomalies. We also evaluate hydroclimate teleconnections of the PDO and IPO in models using PDO- and IPO-associated precipitation, circulation, low-cloud, and vapor pressure deficit anomalies. We show that models' underpowered decadal variability in the Pacific is consistent with their inability to reproduce large-amplitude decadal swings in precipitation in southwestern North America and that models are virtually unable to produce a 30-yr precipitation trend in the southwest of the magnitude observed from 1982 to 2011. We emphasize the importance of model fidelity in simulating Pacific decadal variability for accurate

representation of decadal-scale hydroclimate change in Pacific-teleconnected land regions.

Forwarded message

From: **mluongo** <mluongo@uw.edu>

Date: Mon, Oct 13, 2025 at 10:54 AM

Subject: Next ECS & Cloud Feedback Virtual Symposium: Wednesday October 29th

To: [ECS & cloud feedback virtual symposia](#)

Hello there! You are receiving this email because you are on the ECS & Cloud Feedback Virtual Symposium mailing list.

Our next event will have a tropical Pacific theme and will take place Wednesday October 29th from 12 noon-1 pm ET (4–5 pm UTC). The speakers will be:

- [Kris Karnauskas](#) (CU Boulder): "How Fast is the Mean Upwelling in the Equatorial Pacific Ocean?" ([link](#))
- [Tess Wei-Ping Jacobson](#) (NASA GISS): "Pacific Decadal Variability and Its Hydroclimate Teleconnections in CMIP6 Models" ([link](#))
- [PJ Tuckman](#) (UChicago): "ENSO and West Pacific Seasonality Driven by the South Asian Monsoon" ([link](#))

The latest information about these seminars can always be found on [our website](#), including archived recordings of previous events.

Zoom details will be shared leading up to the event.

Please email if you have any questions or would like to present in a future session!

Take care,

[Nick Lutsko](#)

[Xia Li](#)

[Andrew Williams](#)

[Matt Luongo](#)

PS - If you don't want to receive any more emails about this seminar series, follow the instructions below to unsubscribe. If you want to continue to get these emails, you don't have to do anything. If you received this via forward from a colleague, subscribe [here](#).